Biocontrol of Coffee Shot hole borer, *Xylosandrus compactus* Eichhoff (Coleoptera: Curculionidae) using entomopathogens

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Introduction

- Shot Hole Borer (SHB) is native to Asia and reported on a wide variety of hosts including coffee.
- The SHB incidence has gradually increased in India, especially in Robusta coffee.
- The use of biocontrol agents has always been considered as one of the potential tools in pest management.
- Hence, the current study was carried out to evaluate the efficacy of various entomopathogens for the management of SHB.

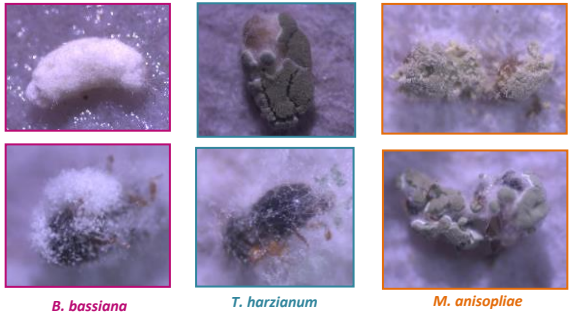

Fig. 1. Pathogenicity of different bioagents on *X. compactus* life stages under laboratory conditions

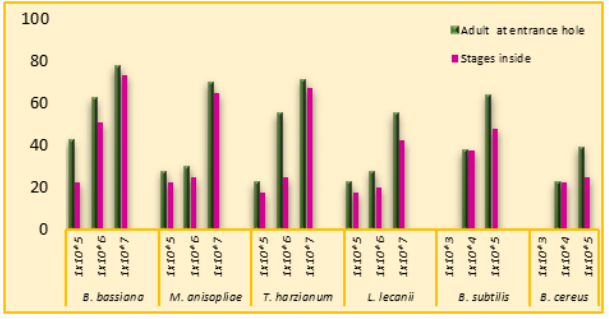

Fig. 2. Mortality percentage of SHB & stages by bio-agents in field

Materials/Methods

- Six locally isolated bio-agents viz., *Beauveria bassiana*, *Metarhizium anisopliae*, *Lecanicillium lecanii*, *Trichoderma harzianum*, *Bacillus subtilis* and *B. cereus* were evaluated against SHB.
- The *In-vitro* and *in-vivo* studies carried out by following the standard protocols and recorded the mortality (Castrillo *et al*., 2013).
- Data was analysed using ANOVA and the means were separated by DMRT.

Results/Discussion

- Laboratory studies revealed that *B. bassiana, T. harzianum* & *M. anisopliae* resulted in significant mortality (≥ 95%) of eggs, larvae, pupae, and adults (Fig.1).
- Field studies revealed, *B. bassiana* caused significant mortality on adults (82.5%) & the life stages (76.0%) inside the twigs (Fig. 2).
- The mycelial growth on life stages was observed on 3rd DAS and the full coverage was noticed by 5th DAS for *B. bassiana* and *T. harzianum* (Fig. 3).
- However, efficacy of entomopathogens depends on environmental conditions for its establishment & persistence in the field.

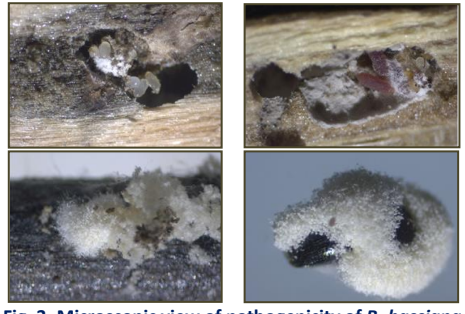

Fig. 3. Microscopic view of pathogenicity of *B. bassiana* on *X. compactus* under field condition

Conclusion/Perspectives

- This study proved that *B. bassiana* could be used as one of the components of IPM for the management of SHB in coffee.
- Further, studies on the development of a commercial formulation of *B. bassiana* is under progress to reduce the reliance on synthetic pesticides.

Reference: Castrillo LA, Griggs MH, Vandenberg JD (2013) Granulate ambrosia beetle, *Xylosandrus crassiusculus* (Coleoptera: Curculionidae), survival and brood production following exposure to entomopathogenic and mycoparasitic fungi. Biol Control 67:220 –226